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OPPORTUNITIES FOR SMALL BUSINESS IN THE FISHERIES OF THE PACIFIC NORTHWEST AND ALASKA

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The fisheries of the Pacific Northwest and Alaska offer opportunities for development and expansion in the post-war period. Several species of fish which have never been utilized at all are abundant enough to support large fisheries, while in other cases, changing population conditions afford a chance for increasing production in fields already established.

While the volume of food fish landed in the Pacific Coast States and Alaska is just about equal to that landed in the Atlantic Coast regions, the population density has been so different in these two regions in the past that the fisheries have developed along entirely different lines. Along the East Coast, by far the largest portion of the catch has been handled in the fresh and frozen state. On the West Coast, because local populations were so sparse and shipping distances so great, it has been necessary to market most of the fish in a form which would have a minimum of perishability. Hence, a large portion of the West Coast fish have been canned and only a small portion consumed fresh or frozen.

As a result of the war, the population of the West Coast regions has shown a large increase, and results of recent surveys have indicated that a large portion of those who have migrated to that region to enter war industries desire to remain there permanently after the war. With this large increase in population, a greater proportion of the fish on the West Coast can be expected to be handled fresh or frozen. It is not expected that there will be a large decline in canned fish output, but rather that most expansion will be in the fresh and frozen fish field. This change in handling methods will offer many opportunities for small business in the immediate post-war period.

The Fish and Wildlife Service, U. S. Department of the Interior, in anticipation of these changes has been giving increasingly more attention to the technical aspects involved. This Service operates, under its Division of Commercial Fisheries, two fishery technological laboratories on the West Coast, one at Ketchikan, Alaska, and one at Seattle, Washington. These laboratories, while at present occupied primarily by wartime projects, have included in their research projects the development of the use of species at present under-utilized, and the improvement of methods of handling fish in the fresh and frozen state. Research on strictly wartime projects has revealed possibilities for post-war peacetime development. For example, research has been carried on in the Seattle Laboratory on development of substitute materials for use by the fishery industry (such as for packaging purposes) to replace critical wartime material. Some of these substitute materials have proved to be better than those originally used. These doubtless will contribute to the post-war expansion of the West Coast fisheries.

Alaska King Crab Opportunities--Prior to 1940, more than half the crab meat consumed in the United States, including 95 percent of the canned crab, was imported. Seventy-eight per cent of this imported crab came from Japan, most of the balance from the U.S.S.R.

For several years prior to 1939, occasional small packs of king crabs were put up in Cook Inlet, Alaska, and during 1938, a floating canning operation for king crabs was at-

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Note: From report submitted to Senate Small Business Committee at Seattle hearing, July 27.

tempted without financial success around Kodiak Island, the Shumagin area, and in the Bering Sea. A substantial number of crabs were caught and the quality of the pack was excellent, but the necessary exploratory work soon exhausted the limited capital of the enterprise.

Japanese crab canning started in 1892. It grew slowly, however, until the introduction of the floating cannery in 1923, which came as a result of several years of successful governmental investigation. This expanded the industry from the waters of Japan proper to the Bering Sea off Kamchatka and Siberia. About 1930, Japanese activities were further extended across Bering Sea into the vicinity of the Pribilof Islands, the north side of the Alaska Peninsula, and Bristol Bay. The latter is the principal domestic center for canning red salmon.

Increasing exploration of a crab fishery by foreign nationals in waters immediately adjacent to United States' territory for subsequent export into the United States raised serious question as to whether American interests were making adequate use of domestic fishery resources. Accordingly, early in 1940, the President requested the Secretary of the Interior to investigate the practicability of establishing an American king crab canning industry in Alaska. Initial inquiry indicated that lack of information regarding areas of abundance, methods for taking and canning king crabs, and a general fear of not being able to compete with the imported product on a cost basis, were the primary obstacles retarding domestic development. Since the cost of necessary exploratory work would be prohibitive for private enterprise under conditions then prevailing, the Congress authorized the Fish and Wildlife Service to make the study.

This investigation was carried out in 1940 and 1941, and a complete report was issued early in 1942, giving charts and tables showing areas of abundance of this species and recommendations as to the best methods of catching and processing the crab (Fishery Market News, May 1942--Supplement). This season, (1944), commercial operations on a small scale are being undertaken in Alaskan waters by at least three firms. Immediately after the cessation of the war, a large increase in this fishery is anticipated.

Utilization of Miscellaneous Species--Several other species of shellfish await development in the Pacific Northwest and Alaska. Dungeness crab, although already utilized to a considerable extent, undoubtedly could be produced in much larger quantities. Both shrimp and clams are found in many localities in southeastern and central Alaska, but except in the region of Petersburg and Cordova, respectively, no attempt has been made to exploit these shellfish. A small variety of the much prized abalone exists in southeastern Alaska and might form the basis of a new industry, although little is known about its abundance and how well it would withstand commercial fishing operations.

Another source of a new supply of fish is the otter trawl fishery, which produces flounders, cod, and similar fish. This fishery has reached a considerable development off the coasts of Oregon and Washington, but until recently, little thought has been given to extending it to waters off the Alaskan coast, although exploratory fishing in connection with the Fish and Wildlife Service's king crab expedition indicated that such fish were abundant there. Since these fish are very suitable for the fresh and frozen markets, it seems quite probable that a considerable expansion will take place in this fishery.

While the salmon fishery has reached maximum production in most areas, there is still some possibility of expansion of the taking of pink and chum salmon in some of the more remote sections of western Alaska.

PROBABLE DEVELOPMENTS IN HANDLING OF FISHERY PRODUCTS

Fresh Fish--If any post-war expansion of the fisheries takes place, added equipment both in the way of fishing vessels and fishing gear will be required. Many vessels taken over by the Navy will be returned in such condition as to require extensive alterations. Other vessels in constant use in the fisheries, and which, at present, have difficulty in procuring repair materials, will require extensive overhauling. Many fishing craft have had to get along with makeshift repairs of their engines because of the difficulty or impossibility of procuring parts during wartime, and these will create a large demand for replacement engines as soon as they are available.

Fishing gear has been very difficult to replace during wartime because of the scarcity of natural fibers. When these become once more readily available, fishermen will require a large number of nets and other gear.

In order to handle increased volume of fresh fish, expanded wholesale marketing facilities will be required, especially for handling fish fillets and other dressed and packaged fishery products. Existing establishments, while perhaps adequate for handling increased production of roundfish, will have to be extensively altered and, in many cases, new plants will have to be built if the expected expansion in packaged fishery products takes place.

Another potential development in the marketing of fresh fish is the possibility of use of air transportation. Because fish are of such high degree of perishability, it is of especially great importance that they be delivered to consumer markets within as short a period of time as possible. Should the cost of air express diminish considerably, air transportation may be economically practical and may be used extensively, at least for the more perishable products such as crab meat. In the low, subfreezing temperatures existing at high altitudes refrigeration will be no problem. Frozen fish thus can be transported very readily, and in the case of fresh fish, it may well be more a problem of keeping them warm enough that they do not freeze rather than to provide refrigeration. Elimination of the need for icing fish in transit will reduce shipping weight considerably since not only the weight of the ice would be saved, but also much lighter shipping containers need be used. Heavy wooden barrels and boxes could be replaced with lightweight fiberboard containers.

In the past, the consumption of fresh and frozen fish in the Pacific Coast area has been limited and retail marketing facilities have, in many cases, been quite inadequate. In some cases, fish has been handled as a side line in grocery or meat stores or antiquated fish stores have used makeshift methods of retailing, such as use of shipping containers as display counters. Lack of necessary sanitation and cleanliness has often been apparent. With an expansion of the fresh fish market, there will be an opportunity for the establishment of numerous small, modern fish retail stores. Especially if quick frozen fish products are to be handled, improved refrigerated display counters will be required.

Frozen Fish--On the East Coast, the past 20 years have seen a rapid development of the frozen fish fillet trade until today many million pounds of such products as frozen cod, haddock, and rosefish fillets are produced annually. On the West Coast, no such comparable development has occurred, and only a relatively small production of such products amounting at the most to a few hundred thousand pounds has been reached. All present indications are that in the immediate post-war period, a tremendous expansion in the processing of frozen fish fillets and steaks on the Pacific Coast will take place. Such an increase will require considerable expansion of freezing and possibly of cold-storage facilities and many new installations will also be required.

One promising outlet for some of these packaged frozen fish products is through refrigerated lockers for home use. Hundreds of such establishments have sprung up in the Pacific Coast region in the past few years. Many of these have made it a practice to market such products as frozen fruit and meat to their patrons at substantial savings through purchase of seasonal products at production peaks when prices are low. The products are then stored against future needs. Frozen fish can be marketed similarly through refrigerated locker establishments, adding to the revenue of the locker operators and, at the same time, affording a substantial saving and convenience to the locker patrons. While a few locker operators still hold the old belief that frozen fish will contaminate other foods stored with it, experiments conducted at the Seattle Fishery Technological Laboratory of the U. S. Fish and Wildlife Service have shown conclusively that such locker storage of frozen fish has no harmful effect whatever on even such susceptible products as butter.

Another type of frozen fishery product which seems destined for important development in the future is that of the pre-cooked frozen food type. Such products as fish chowder, fish a-la-king, baked fish, and fish salads are cooked and prepared completely for the table and then packaged, frozen, and stored. The consumer has only to thaw the product, and, in some cases, to warm it, to make it ready for serving. Similar precooked frozen foods in lines other than fish have already been developed and are entering the market. Their convenience to the busy housewife have made them readily acceptable and a rapid expansion in their production is being forecast. Experiments in the Seattle Laboratory have been conducted recently on such products and several have been developed which are considered to be very palatable and which hold up well in cold storage.

Miscellaneous Preserved Fishery Products--Probably salmon is being utilized for canning purposes about to the maximum which the availability of its supply warrants. Numerous spe-

cialty products, however, can be produced from salmon on a small scale such as canned, smoked salmon. Such products would have only a limited sale and would not increase the total salmon pack by an appreciable amount yet might furnish a livelihood for several small operators. Such products are not necessarily limited to salmon. For example, a product similar to finnan haddie which should find a ready market can be produced from several West Coast fish. When canned, this product is non-perishable. Several such products have been developed by the Fish and Wildlife Service laboratories.

Various dehydrated fish products may have some limited possibility in the post-war period. Extensive experiments have been carried out by Service laboratories on dehydration of fish for wartime use. Most of such dehydrated fish is not palatable enough for domestic consumption, but a few special products may have post-war possibilities. One of these is an all-dehydrated fish chowder in which all the dried ingredients are packaged together, so that it is only necessary to add water and heat to reconstitute the chowder.

Fishery Byproducts--An enormous volume of salmon cannery trimmings are, at present, discarded in Alaska. These trimmings contain the same protein and other nutrients that go into the canned product. Because of the isolated locations of the canneries in Alaska, the brevity of the canning season, and the great distances between canneries, it has been impracticable to utilize most of this cannery waste in the past. Owing to the perishability of the raw material and the distance between canneries, it has been impossible to erect a few centrally located reduction plants to handle waste from several plants, except in southeastern Alaska where canneries are relatively close together. The canning season extends only 4 to 8 weeks in most cases, and the cost of reduction equipment is too great for economical operation during this short period.

Laboratories of both Fish and Wildlife Service and those of industry have been giving considerable attention to utilization of cannery wastes with the hope of developing some simplified procedure whereby it could be at least partially processed or preserved at the individual canneries, final processing then taking place at centrally-located plants. Owing to the complexity of the problem and its being interwoven with economic considerations, no immediate solution is in sight. However, there seems no doubt that this problem will eventually be solved, and, at that time, there will be many opportunities for new plants in Alaska to handle the large quantity of raw material now being discarded.

When the fish fillet expansion takes place, there will likewise be room for new reduction plants to take care of the increased volume of fillet waste. The Service is beginning a project to work out technical details in connection with such fillet waste reduction.

Certain pharmaceutical products are prepared from fish. The Vitamin A fish-liver field is well known, and it is probably developed to the fullest capacity that the availability of raw material permits. Other vitamins of the Vitamin B group can be obtained as a by-product from fish reduction plants, and although a good start already has been made in this direction in California, most other areas have not given this field consideration.

Still other pharmaceutical products have been produced from fish waste. These include amino acids, enzymes, and many other similar products. This field has scarcely been touched and offers tremendous opportunity for research and development.

Before the war, most of our agar and gums which are extracted from seaweeds were imported from Japan. With this source cut off, domestic production had to be initiated to augment the limited stockpiles available. Several plants have been in production, especially in southern California. These have managed to produce enough of such materials to supply our most critical needs. However, owing to lack of availability of equipment and manpower, these plants have been able to operate only at a small portion of the capacity which would be required to satisfy all of our needs in this field. If it is found to be feasible to compete with foreign sources in the post-war period, considerable expansion in such plants will be required.

Opportunities Connected With Sport Fishing--Sport fishing in the Pacific Northwest and especially in Alaska offers innumerable opportunities for opening of fishing camps and resorts. Many service men from all sections of the country, who were stationed or trained in Washington, Oregon, and Alaska, will return home after the war with glowing reports of the sport fishing in this section. Existing resorts cannot hope to cope with the influx of sport fishermen who will visit this area after the war. While salmon and trout fishing will probably be

the chief attraction, interest in sport fishing for halibut or other "groundfish" could undoubtedly be fostered, as well as for various fresh-water fishes, abundant in lakes and streams. Besides actual establishment of fishing resorts, other opportunities exist in connection with guide service required, and considerable employment should be available for local citizens well acquainted with fishing in any particular area.

With vast increases in sport fishing will come chances for establishment of small concerns for manufacture of all sorts of accessories, equipment, and bait. For example, although some salmon eggs are already being preserved for bait, most of them are discarded at present. These eggs will be available for manufacture into preserved bait when the demand increases. Returning disabled veterans might find a profitable business in the production of hand-made lures. In addition, there should be an increase in the demand for all sorts of accessories such as tackle, boats, etc.

SUMMARY

Changing population conditions in the Pacific Northwest and Alaska in the immediate post-war period are expected to change the emphasis from canned fish to a more balanced production of all kinds of products. An especially large increase will take place in the processing of fresh and frozen fillets. The changes will create many opportunities not only for expansion of existing facilities, but in the formation of new concerns. Fish and Wildlife Service fishery technological laboratories, in anticipation of these and other changes, are collecting technical information which will be available to aid the fishing industry when these changes take place.

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Species of Fishes Present in Alaska, with their Approximate Abundance by Areas, their Present Yields, and an Estimate of their Potential Yields.

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Species	Estimate of Abundance 1/				Production (In thousands of pounds)	
	South-eastern	Central	Kodiak and West	Bering Sea	Present	Potential
Salmon	****	****	****	****	510,000	560,000
Herring	***	***	***	?	220,000	300,000
Halibut	**	**	**	?	40,000	45,000
Sablefish	**	**	?	?	2,900	10,000
Cod						
Gray	*	**	**	***	9,000	100,000
Other	**	*	**	***	...	100,000
Flounders	***	**	****	****	57	200,000
Rockfishes	***	**	***	?	139	100,000
Sharks						
Dogfish	***	***	***	?	12	50,000
Other	**	**	**	?	Unknown	10,000
Greenlings						
Lingcod	**	**	**	?	10	15,000
Atka Mackerel			***		...	5,000
Other	**	**	**	?	...	10,000
Trout						
Dolly Varden	**	*	**	*	46	10,000
Steelhead	*	*	*	*	...	1,000
Hake	**	**	**	?	...	10,000
Skates	**	*	*	?	...	10,000
Ratfish	*	*	*	?	...	4,000
Smelts						
Eulachon	*	?	?	?	Unknown	2,000
Other	*	*	*	?	...	1,000
					782,164	1,543,000

1/ * Present in some numbers
** Present in considerable numbers
*** Present in abundance
**** Present in great abundance

Note: This table was prepared in the Division of Fishery Biology.